

## **VETERINARY DIAGNOSTICS**

### **PROGRAM PROFILE**

<b>Program Goal</b>	Operate the diagnostic laboratory facilities to support veterinary disease prevention, detection, control, and eradication programs. Provide diagnostic assistance to the livestock and poultry industries to protect the Nation's animal health against foreign and domestic diseases.
<b>Enabling Legislation</b>	21 USC 114; Animal Industry Act of 1884.
<b>Economic Significance</b>	Benefits from this program are significant, given the large number and variety of cases submitted. Rapid disease diagnosis enables the program to initiate effective and cost-efficient control activities.
<b>Principal Approach and Methods Used to Achieve Goals</b>	A laboratory assistance program. Program methods include state-of-the-art diagnostic testing, providing diagnostic reagents, and performing differential diagnoses. The program also performs biotechnologically-derived laboratory procedures for disease eradication, export testing, and foreign animal and poultry disease diagnostic activities. These procedures enable APHIS to conduct increasingly definitive tests to decrease animal and poultry losses, enhance exports, and prevent the entry of foreign animal and poultry diseases.
<b>History</b>	When the National Animal Disease Laboratories were dedicated in 1961, their function was primarily research. In 1973, APHIS created the National Veterinary Services Laboratories (NVSL), which is now the center for diagnostic testing. Services range from a single lab test to comprehensive lab services covering all possible pathogens for a suspected disease outbreak. In FY 1979, the program was funded separately to reflect the high priority and volume of the NVSL workload. APHIS assumed responsibility from ARS for diagnostic testing and training activities at the Animal Disease Center at Plum Island, New York in 1984. NVSL established a <u>Mycobacterium bovis</u> serum bank in FY 1988 for use in developing new serologic techniques. In FY 1989 and FY 1990, NVSL began water analysis, serological testing, and the development of a serum bank for the National Animal Health Monitoring System

(NAHMS) as part of the National Swine Survey. User Fees were implemented in September of 1993 for certain diagnostic activities, including testing and producing reagents. These user fees are assessed to States, industry, universities, and other Federal Agencies requesting services from NVSL. User fees for new tests and services were implemented in FY 1998 including fees for isolation, identification, and serology tests.

**State and Local Cooperation**      APHIS provides diagnostic services and reagents for States when special cases occur.

**Involvement of Other Agencies**      FSIS, ARS, and FDA.

### RESOURCE DATA

-----Obligations-----

	<u>Direct</u>	<u>User Fees</u>	<u>Staff-Years (including User Fees)</u>		
FY 1996	15,078,064	1,360,000	223		
FY 1997	15,920,819	1,392,640	220		
FY 1998	15,720,891	1,676,000	221		
FY 1999 (est.)	16,622,000	1,809,000	217		
FY 2000 (est.)	16,973,000	2,149,000	220		
	<u>APHIS</u>	<u>Coop</u>	<u>Total</u>	<u>CCC</u>	<u>Contingency Fund</u>
Cum.	\$211,505,270	--	\$211,505,270	--	\$270,000

### RECENT ACCOMPLISHMENTS

**Diagnostic Support**      NVSL and FADDL continued to support animal disease prevention, detection, control, and eradication programs and to provide diagnostic assistance to the livestock and poultry industries. NVSL received and tested 39,606 diagnostic submissions in FY 1998, including 2,839 for import and 2,900 for export animals. FADDL received and tested 325 diagnostic submissions. These represented 213 suspect foreign animal disease investigations, 78 import tests, 26 safety tests, and 8 reference assistance requests or the testing of zoo animals. In addition, NVSL continued to provide diagnostic support for the 1998 vesicular stomatitis virus (VSV) outbreak.

NVSL tested 4,013 dip vat samples, up from 3,952 in FY 1997, for pesticide concentration in support of the cattle tick program. In addition, NVSL received 635 brains to test for bovine spongiform encephalopathy (BSE) and continued to support the BSE surveillance program. Requests to certify laboratories to conduct specific tests have increased in recent years.

At the request of the National Johne's Working Group, NVSL provided validation tests for Johne's serology and culturing. In support of the American Association of Veterinary Diagnosticians, NVSL assembled, distributed and evaluated check tests for serological testing and culturing of disease organisms. NVSL processed 238 check tests for equine infectious anemia (EIA), 58 for bluetongue, and 68 for BLV. During FY 1998, NVSL began charging user fees for selected check tests including EIA, bluetongue, BLV and Johne's. A new user fee docket is scheduled to go into effect in early FY 1999.

#### **Contagious Equine Metritis**

During FY 1998, a variant of the causative organism of contagious equine metritis (CEM) was identified at the NVSL. The organism was found in a donkey Jack and mares bred to the Jack. In addition to characterizing the new organism, the NVSL provided diagnostic support to the epidemiological tracebacks conducted to determine the degree of spread. Although the donkey isolate produces little, if any, disease in horses, its serological cross reactivity with the CEM organism is significant.

#### **Avian Influenza (AI), Classical Swine Fever (CSF), and African Swine Fever (ASF)**

NVSL isolated the AI virus, subtype H7N2, from 21 live-bird markets in New York, 14 in New Jersey, and 1 in Connecticut. Also, NVSL isolated the AI virus, subtype H7N2, from commercial chickens in 14 premises in Pennsylvania. All AI virus, subtype H7N2, isolates were characterized as low pathogenic. In addition, NVSL pathotyped the AI virus, subtype H5N2, in Mexico and in Pakistan. Additionally, NVSL provided diagnostic assistance for poultry submissions from Honduras, Belize, Guam, Bermuda, Taiwan, and Hong Kong (China).

NVSL continued to provide diagnostic support for CSF and ASF serosurveillance for Puerto Rico and the continental United States, for live-bird market AI surveillance, and for the H7N2 AI outbreak in Pennsylvania. In addition, the NVSL continued to participate in the acute porcine reproductive and respiratory syndrome study with serology and virus isolation from affected herds. Virus isolates have been propagated and are undergoing safety and sterility testing for anticipated release to researchers during the spring of 1999.

### **National Animal Health Monitoring System (NAHMS)**

Laboratory support to the National Animal Health Monitoring and Surveillance program is ongoing at the NVSL. During FY 1998, the NVSL completed testing for the Beef '97 study. This testing consisted of serological tests for Johne's and BLV, tests for water quality, *Salmonella* prevalence, and copper and zinc deficiencies. The first survey of horses was initiated in 1998. Testing included serological tests for influenza and equine viral arteritis and prevalence testing for *Salmonella*, *Streptococcus equi*, and fecal parasites. Pasture was tested for endophytes, and feed was tested for fumonisin and *Salmonella*. In addition, approximately 3,100 sera were tested for equine influenza by hemagglutination inhibition and 3,500 sera were tested for EVA by serum neutralization for the NAHMS '98 survey.

The NVSL continued to encourage and support collaborative projects that will enhance the delivery of animal health programs. In support of the National Animal Health Monitoring System (NAHMS) 1998 survey, the NVSL tested 12,672 samples for various chemical compounds and approximately 14,000 samples for BLV.

### **Training Courses**

APHIS conducted 21 formal training courses at the NVSL, covering 81 days with 419 (200 State, 154 Federal, 26 military, and 39 foreign) participants. These training courses focused on foreign animal diseases and diagnostic procedures. It should be noted that one of these, an International Foreign Animal Disease (FAD) school presented at FADDL, was conducted entirely in Spanish.

**Chronic Wasting Disease**

Chronic wasting disease (CWD) surveillance for 1998 included over 200 submissions from captive herds with 31 positive animals identified. Surveillance for CWD in hunter killed animals included a total of 1,050 samples examined from South Dakota, Nebraska, and New Jersey. NVSL pathologists conducted training in specimen collection for CWD surveillance for state personnel in South Dakota and Nebraska.

**Quality Assurance**

During FY 1998, the National Veterinary Services Laboratories (NVSL) implemented its strategy of establishing an internationally recognized quality assurance program. To date, NVSL activities in vesicular disease, brucellosis, avian influenza, and transmissible spongiform encephalopathies have been reviewed in accordance with the OIE (Office International des Epizooties) Guidelines for Quality Laboratories. In addition, the NVSL has continued to sustain previous initiatives regarding the standardization of internal processes and methods, instrument calibration, data reporting and tracking systems, and auditing and validation practices. The NVSL has also maintained full accreditation by the Association for Assessment and Accreditation of Laboratory Animal Care and has completed surveys of all critical instruments and facilities' operating systems in readiness for the Year 2000.

**Assistance to Foreign Countries**

The NVSL provided assistance in the development of an Emergency Response Plan for the Hong Kong H5N1 avian influenza (AI) virus. It also helped in the development of the Interamerican Institute for Cooperation in Agriculture's plan for classical swine fever (CSF) in the Dominican Republic and Haiti as well as assisting in the diagnosis of bovine leukosis virus (BLV) in Egypt. FADDL also provided diagnostic support to Lebanon for foot-and-mouth disease and Central American and Caribbean nations for classical swine fever and to Peru for an uncharacterized viral equine agent. The NVSL participated in developmental work on classical swine fever baculovirus expression vector received from Switzerland.

